Abstracts

Transient Analysis of Lossy Parabolic Transmission Lines with Nonlinear Loads

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The exact analytical expressions of the time-domain step response matrix parameters for the lossy parabolic transmission line are developed, therefore extending the range of problems where Allen's method can be applied for the transient analysis of networks consisting of interconnections of linear distributed elements, lumped linear and/or nonlinear elements, and arbitrary sources. For completeness, similar expressions are derived for the lossless parabolic line. In order to demonstrate the versatility of the techniques presented in this paper, we study the transient response of a lossy parabolic line subjected to the following sets of boundary conditions: 1) a unit step input and a linear load, and 2) a trapezoidal pulse generator and a nonlinear load.

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